United States Department of the Interior
Bureau of Land Management

Preliminary Environmental Assessment

DOI-BLM-CO-S010-2014-0025

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GCC Energy Proposed Exploration License Application

COC 76563

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BLM

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1. Purpose and Need

1.1 Introduction

On May 15, 2014, pursuant to regulations in 43 Code of Federal Regulations (CFR) 3410.2-1, GCC Energy, LLC (GCC), a subsidiary of Grupo Cementos de Chihuahua, submitted a Federal Coal Exploration License Application to the Colorado State Director of the Bureau of Land Management (BLM). The BLM Tres Rios Field Office (TRFO) is charged with administrating the federal mineral estate.

This Environmental Assessment (EA) has been prepared to disclose and analyze the potential environmental effects of the GCC Proposed Exploration License Application (hereafter referred to as the "proposed project"). The EA is a site-specific analysis of potential effects that could result from the implementation of the proposed project or the alternative(s) to the proposed project. The EA assists the BLM in project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" effects could result from the proposed action. Significance is defined by the Council on Environmental Quality's regulations implementing NEPA at 40 CFR 1508.27.

An EA provides analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If following the EA analysis, the BLM determines that a project has "significant" effects that cannot be mitigated to "less than significant," then an EIS will be prepared for the project. If not, then a Decision Record (DR) may be signed for the EA that describes the decision. The decision can be an alternative or a combination of alternatives. The DR and the FONSI document why the implementation of the selected alternative would not result in significant environmental effects beyond those already addressed in the September 2013 Tres Rios Field Office and San Juan National Forest Final Environmental Impact Statement and Resource Management Plan (RMP).

This chapter presents the purpose of and need for the proposed project, as well as any relevant issues such as human, natural, cultural, and environmental elements that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project, the BLM has considered two alternatives (other alternatives were considered but eliminated from detailed analysis): the proposed action and the no action alternatives, which are presented in Chapter 2; Chapter 3 describes the existing environment of the project area, and Chapter 4 describes the potential environmental effects from implementing each alternative action.

1.2 Background

The King coal mine began operation in 1938 at their current location in Hesperus, Colorado, and obtained its first Federal coal lease in 1941. Coal production has occurred and is currently occurring on federal and private mineral leases and beginning in 2007, a State of Colorado lease from Section 36.

Both the King I and King II mines were operated by GCC until 2009 when mining operations ceased at the King I mine site. The King II mine currently operates 24 hours a day and is operating under an approved Mine Plan that authorizes annual production of up to 1.3 million tons of coal annually. King II mine employs about 165 persons with annual salaries and employee benefits of approximately $12 million. Surface facilities at the King II site cover approximately 25.5 acres, with an underground mining operation of approximately 565 acres as of July 2015. The existing King II mine operations lease area is shown on the project area map included in Appendix A.

The mine is known for its low sulfur, ash, and alkali content and is sold off site, mostly in the U.S. southwest and Mexico for the manufacture of cement to the local railroad in Durango, Colorado, and for local home heating. GCC has applied for an exploration license to explore potentially mineable coal north of the existing underground operations at the King II mine site.

1.3 Need for the Proposed Action

The BLM's need for the action is to respond to GCC's application to explore for coal deposits in accordance with the Mineral Leasing Act (MLA), as amended by the Federal Coal Leasing Amendments Act (FCLAA) of 1976, and the Federal Land Policy and Management Act of 1976. The MLA authorizes the BLM to issue exploration licenses for drilling of coal test holes for reserve determination.

1.4 Purpose for the Proposed Action

The purpose of the proposed action is to allow the applicant access for exploration of federal coal reserves.

1.5 Decision to be Made

Based on the information in this EA, the BLM will decide whether to issue a mineral exploration license and if so, under what terms and conditions. In compliance with the MLA, the decision to be made is in what manner resource development should occur. The BLM TRFO Field Manager is the responsible officer who will decide one of the following:

- To issue an exploration license as proposed; or
- To issue an exploration license with additional conditions of approval (COAs); or
- To deny the exploration license.

1.6 Conformance with BLM Land Use Plan(s)

Pursuant to Title 40 of the CFR, Part 1500, this site-specific EA tiers to and incorporates by reference the information and analysis contained in the BLM Tres Rios Field Office and San Juan National Forest Final Environmental Impact Statement (September 2013) and is in conformance with the Tres Rios Field Office Approved Resource Management Plan (February 2015, Record of Decision [ROD] p. II-114).

> 2.20.1 The planning area supports the exploration, production, and development of energy and mineral resources in a multiple use context, as is consistent with all applicable laws.
>
> 2.20.4 Reclamation of mineral exploration, development, and production activities is stable, long term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.

1.7 Relationship to Statutes, Regulations, or Other Plans

The MLA of 1920, as amended, authorizes the BLM to issue an exploration license for coal mining activities. This license is a binding legal contract that allows exploration by the holder(s). GCC would be issued the license subject to COAs imposed by the BLM. COAs, when appropriate, protect the rights of others and protect natural resources on public lands. Authorization for BLM approval of exploration permits are found in 43 CFR 3480 – Coal Exploration and Mining Operations Rules. In addition, the Federal Land Management Policy Act of 1976 (43 U.S.C. 1761-1777) mandates that BLM should adhere to the principles of multiple use in the management of public lands.

GCC also submitted A Notice of Intent (NOI) to Conduct Coal Exploration (NOI No. X-2014-236-01),) to the State of Colorado, in accordance with applicable provisions of the Colorado Surface Coal Mining Act and the Regulations of the Colorado Mined Land Reclamation Board for Coal Mining.

Federal law mandates protection of some surface resources that are potentially affected by the development of the proposed action. Surface resources threatened by development are protected by the following legislative acts:

- National Historic Preservation Act (NHPA) of 1966 (PL 89-665), as amended (PL 52-209),and its implementing regulations (36 CFR 800)
- Archaeological and Historical Act of 1974 (PL 93-291)
- American Indian Religious Freedom Act (48 U.S.C. § 1996 et seq.)
- The Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.)
- The Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712)
- Clean Water Act of 1972, as amended (33 U.S.C. §§ 1251-1387)

- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001 et seq.)

Compliance with Section 106 responsibilities of the NHPA are adhered to by following the BLM–Colorado State Historic Preservation Office protocol agreement that is authorized by the National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, the National Conference of Council of State Historic Preservation Officers, and other applicable BLM handbooks.

Surface water resources are protected by the Federal Water Pollution Control Act (40 CFR 112). The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and other federal regulations are designed to control the releases of hazardous materials into the environment and to direct the responses to accidental spills.

Threatened and endangered flora and fauna species are protected under the Endangered Species Act of 1973, as amended (PL 94-325). Additionally, the Migratory Bird Treaty Act (16 USC 703-712) and the Eagle Protection Act (16 USC 668-668d) protect other sensitive wildlife species potentially occurring in the proposed project area.

Executive Order 11312 of 1999, "Invasive Species," establishes measures to prevent the introduction of invasive species and to provide for their control as well as minimize the economic, ecological, and human health impacts that invasive species cause. This Executive Order provides guidelines to federal agencies on how to cope with invasive species, create an Invasive Species Council, and implement an Invasive Species Management Plan.

The Federal Plant Protection Act of June 2000 and the Federal Noxious Weed Act of 1974, Section 2814, provide for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or public health.

Air quality standards in Colorado are under the jurisdiction of the U.S. Environmental Protection Agency (USEPA) and the Colorado Department of Public Health and Environment (CDPHE). The BLM has developed a statewide Colorado Air Resource Protection Protocol, which is a strategy to address air resource concerns consistently (BLM 2013a). Ambient air quality standards are determined by the National Ambient Air Quality Standards (NAAQS).

Executive Order 12898 of 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires implementing procedures to ensure that proposed projects within the auspices of federal agencies do not result in disproportionate shares of negative environmental impacts affecting any group of people due to a lack of political or economic strength. Environmental justice requires, "the fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." As such, this document includes an assessment of the impacts from the project on minority and low-income populations.

The BLM manages paleontological resources under a number of federal regulations. Principally, paleontological resources on BLM lands are protected under Title 43, Subpart 8365.1-5 of the Code of Federal Regulations, which prohibits the willful disturbance, removal, and destruction of scientific resources or natural objects. Subpart 8360.0-7 identifies the penalties for such violations. In addition, the Federal Land Policy and Management Act of 1976 (P.L. 94-579) requires that the public lands be managed in a manner that protects the "scientific qualities" and other values of resources under BLM management.

In January 1997, the Colorado BLM approved the Standards for Public Land Health. Standards describe conditions needed to sustain public land health and relate to all uses of public lands. Only one of the proposed exploration drilling locations is on BLM surface.

1.8 Scoping and Identification of Issues

The Council on Environmental Quality (CEQ) defines scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the key issues related to a proposed action alternative" (40 CFR 1501.7). The BLM TRFO resource specialists reviewed the proposed project to identify potential issues. The BLM conducted external scoping on October 10, 2014, by way of sending scoping letters to the Ute Mountain Ute Tribe (land owner where activities would occur), adjacent land owners and to other expressly interested parties. In total, 33 scoping letters were sent, and 5 scoping response letters/emails were received. In addition the interested public scoping letter was posted on the BLM NEPA log at:

http://www.blm.gov/co/st/en/BLM_Information/nepa/TRFO_NEPA.html

On October 17, 2014, the BLM sent 34 letters to various Tribal agencies. BLM met with the Ute Mountain Ute Tribe Environmental Programs Department regarding this proposal on September 29, 2014. The proposal was also presented to a Native American consultation meeting in October, 2014 in Montrose, CO. A total of 10 response letters/emails were received

For the purpose of the BLM's NEPA analysis, an "issue" is a point of disagreement, a debate within a proposed action based on some anticipated environmental effect.

Issues that have been developed as a result of the scoping process include potential impacts to air and groundwater quality, biological resources (including sensitive species potential), socioeconomics, and soils.

In addition, GCC also met with the UMU Natural Resources Committee and Tribal Council on multiple occasions to discuss the proposed exploration project and to identify issues of concern. UMU issues of concern included cultural resources protection, surface and groundwater quality, impacts to roads/transportation network, land use conflicts associated with hunting and grazing, tree cutting, and disturbance reclamation.

Concerns identified through public scoping are presented in Table 1.

Table 1. Public Scoping Summary

Issues Identified
Water quality concerns; greenhouse gases and climate change; reclamation success
Big game winter range
Mineral overlap with proposed oil and gas leasing; water source

Issues and concerns identified as a result of internal and external scoping include the following and are addressed in Chapters 3 and 4:

Air Quality

Could excavation of drilling cutting pits and drilling activities result in air pollutant emissions?

Soils

Would the proposed action impact soils through erosion?

Wildlife

How would the proposed action affect raptors and big game in the project area?

Migratory Birds

Would the proposed action affect migratory birds in the project area?

Vegetation

How would the proposed action affect vegetation in the project area?

Invasive Species Noxious Weeds

Does the proposed action have the potential to spread invasive species/noxious weeds?

Socioeconomics and Environmental Justice

What are the effects to socioeconomics of the proposed action?

Water Resources / Water Quality

Would drilling the exploration wells have the potential to impact Water Quality?

1.9 Issues Considered, but Eliminated from Further Analysis

Based on the BLM's internal and external scoping processes and as a result of considering potential environmental impacts to resources not identified during scoping, the following resource areas have been eliminated from further analysis. The resources eliminated and rationale for their dismissal from detailed analysis is described below.

- Farmlands, prime or unique – There are no prime or unique farmlands in the proposed project area (NRCS 2014).
- Floodplains – There are no mapped floodplains or perennial surface water resources in the project area. According to Federal Emergency Management Agency flood hazard

boundary data, there are no flood hazard boundaries within 3 miles of any of the proposed drill sites. The project is located within "an area of minimal flood hazard".

- Lands with wilderness characteristics – There are no proposed or designated wilderness areas in the proposed project area.
- Wild and Scenic Rivers – There are no designated or proposed wild and scenic rivers within the proposed project area.
- Noise – Ambient sound levels in the project area are very low due to the absence of existing facilities, residences or public roadways in the immediate area. The proposed action would have minor, short-term increases in noise, which would be further reduced by dense area vegetation cover and topography at most locations. The nearest residence is beyond 0.75 mile from the project area.
- Minerals – The proposed exploration drilling would have no impacts to the availability or access to mineral estates in the project area. One commenter was concerned about ownership of the mineral estate while another commenter noted a potential conflict with future oil and gas leasing in the project area. All coal mineral estates are correctly identified in Section 2.1 this EA. The proposed exploration drilling application does not restrict in anyway, future leasing of the mineral estate for coal or oil and gas exploration or development.
- Paleontological Resources – The Potential Fossil Yield Classification in the project area is Class 3 and Class 4. Class 3 areas have moderate to unknown potential and are described as fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential. Class 4 areas are geologic units containing a high occurrence of significant fossils. No paleontological resources were found during surface surveys of the proposed disturbance areas. Design criteria intended to protect potentially encountered subsurface fossils would result in no impacts to paleontological resources.
- Cultural Resources – Class III archeological inventories in areas of proposed ground disturbance were conducted by PaleoWest Archaeology (PaleoWest) on April 16 and 17, 2014. All of the proposed 23 drill locations and overland routes were surveyed with a 100-foot buffer. During inventory, PaleoWest recorded two new cultural resources tentatively recommended "not eligible for inclusion in the National Register of Historic Places" and five isolated finds. Proposed drill locations and overland travel routes were selected and routed to avoid cultural resources. There would, therefore, be no impacts to cultural resources.
- Transportation – Access to the project area is by State highways and a county road. It is estimated that traffic would consist of about four or five trips to and from the project area each day. Vehicles would consist of a drill rig, a geophysical logging truck, and 1 – 2 personal-sized vehicles to transport a drilling crew and an operator for reclamation dirt

work. One or two trips may be made during the day to get needed materials or equipment. In addition, a flatbed may be used at the beginning and end of the project period to transport a backhoe to the site. Existing access roads within the proposed project area are located on UMU Hay Gulch ranch property. Access is limited to UMU Tribal members and non-members with a valid UMU Crossing Permit. Approximately 10 feet of one of these existing two-track routes extends to BLM surface lands to access proposed drill site GCC-14-20. The amount of additional traffic would not be noticeable.

- Range Resources – The proposed exploration drilling is almost entirely within an area managed by the UMU as tribal ranch properties, specifically Hay Gulch ranch properties. Cattle and horse grazing and fencing are evident in the project area; albeit usage is apparently not intensive, and no livestock were observed during any of the surveys. In the course of project proponent meetings with the UMU Tribe, it was confirmed by the Tribe that grazing is limited to mostly horses in the area. No impacts to livestock fencing would occur, and no adverse impacts to rangeland health would occur. Rangeland health consists of a set of standards that the BLM has developed for range resources on lands under BLM jurisdiction. Approximately 0.23 acres of ground disturbance would occur at drill site GCC-14-20 on BLM administered lands. Site reclamation requirements, design criteria and reclamation bonding would assure that any effects would be local and short-term.
- Public Health and Safety – Public health and safety concerns are related to vehicle travel on area roads and public safety around drilling equipment. There is no public access to the project area.
- Recreation - There are no public recreational activities available in the project area, as nearly all of the area is private property. The Ute Mountain Ute property is used by the Tribe for hunting. Game includes deer, elk, bear, turkey, and some mountain lion. Operations associated with the Proposed Action would typically be conducted in a small area and move every other day. Activities would be completed with about seven weeks. Animals may temporarily disperse but would be expected to return once operations are completed. Affects to hunting would be local and short-termed. There is no public access to the few small surface parcels of BLM administered lands in the project area.
- Socioeconomics and Environmental Justice – Measurable effects on the economy from a short-termed, local exploration program would not be expected to occur.
- Soils – The operator has committed to design features which will limit any soil erosion from occurring. These include such as locating drill sites away from drainages and on relatively flat land, and using berms or other features to control run-off where necessary. Repairs to dirt roads may be made at the onset of operations to allow vehicles to access drill sites. In addition, GCC will not do any site preparation or road maintenance when ruts of 6” or more begin to develop. Soils are not expected to be affected.

- Vegetation – There are no records of threatened, endangered, or special status species plants in the area. No trees would be removed to facilitate overland travel to proposed

drill site locations. Oak brush will be avoided wherever possible. Less than 1% of the project area could potentially be disturbed. Applicant-committed design features include common best management practices for revegetation. Vegetation loss would be small and short-termed. Visual Resources – There is no visual resource management prescription applied to the private UMU ranch properties. Drill site GCC-14-20 is on BLM administered lands that have a Visual Resource Inventory (VRI) Class IV classification. The management objective for VRI Class IV areas is to provide for management activities that require major modifications of the existing character of the landscape. Accordingly, the approximately 5.3 acres of impact to BLM surface lands is in accordance with area management objectives.

- U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species – The proposed project will not have any impacts on species listed under the Endangered Species Act providing that all activity within ½ mile of potential Mexican Spotted Owl habitat takes place outside the breeding season (March 15 through August 31). In addition, surveys following the outline in the Mexican Spotted Owl Recovery Plan may be performed accordingly, if absence is inferred after 2 years of surveys are completed (according to the outline protocol) then 'no effect' may be inferred for the following 5 years for any activity in MSO habitat. The BLM TRFO, Fish and Wildlife Clearance Report is included in Appendix B.

2. Description of Alternatives, Including Proposed Action

2.1 Alternative A – Proposed Action

GCC has filed an application for a coal exploration license to drill 23 test holes with the BLM to explore potentially minable coal reserves northwest of the existing King II Coal Mine. One drill site, GCC-11-04 was subsequently dropped from consideration to be drilled bringing the number of drill sites analyzed in this EA to 23. The proposed project would be located approximately 7 miles west of Hesperus, Colorado, and approximately 3 miles east of Cherry Creek in La Plata County, Colorado. All of the proposed exploration drilling locations would be into federal coal resources.

The surface land in the proposed approximately 4,846-acre project area is owned predominantly by the UMU Tribe in the form of tribally acquired ranch properties outside of the exterior boundary of the reservation. Other private property and minor inclusion of BLM administered lands also occur in the project area and are shown in the Project Area Map included in Appendix A. The proposed project is located on the Thompson Park and Hesperus, Colorado, U.S. geological Survey 7.5-minute quadrangle. A vicinity map, a project area map and a site detail map are provided in Appendix A.

The legal description of the proposed exploration area is as provided below. With the exception of one BLM surface location, all proposed exploration drilling locations are on UMU tribal ranch property surface. Proposed drilling locations would be drilled into the federal coal mineral estate

Sec. 17: lots 2, 5, 6, 7, 8, 9, 10;
Sec. 17: N½SW¼;
Sec 18: 1-10, inclusive;
Sec. 18: NE¼, E½NW, NE¼SW¼, N½SE¼;
Sec. 19: 1, 2, 6, 7;
Sec. 19: NE¼, E½NW¼;
Sec. 20: NW¼;
Sec. 30: lots 1-4, inclusive;
Sec. 30: NW¼NE¼, E½NW¼.

T.35N., R. 12W.,
Sec. 13: N½NE¼, E½NW¼, SW¼NW¼, S½S½, NE¼SE¼;
Sec. 14: S½NE¼, SW¼, W½SE¼, SE¼SE¼;
Sec. 15: S½;
Sec. 21: E½, E½W½;
Sec. 22: N½, SW¼, W½SE¼;
Sec. 23: N½N½, SE¼NE¼, SE¼SW¼, SE¼
Sec: 24: N½, SW¼, NW¼SE¼;
Sec: 25: lots 3, 4, 5, 6

Background

Final locations for all proposed drill locations and access routes were determined in the field by biologists and archaeologists working with surveyors, representatives from the UMU Tribe and GCC personnel and were selected to avoid impacts to sensitive biological and/or cultural resources. Two proposed drill sites and access routes were moved several hundred feet to avoid cultural resources. The spacing of exploration drill sites were made to both minimize the need for surface disturbing activities associated with access and drill site locations and to provide a representative cross section of the sub surface coal seams. Drill site spacing and locations were also intended to maximize use of existing area roads and to identify drill sites that were flat and easily accessible. Alternative access routes were evaluated for all eight locations requiring overland travel. Overland access routes were selected to minimize vegetation clearing, to avoid ground disturbing activities and to utilize direct access from existing roads. Additionally, as specified in Section 2.1.1, it is possible that some drill holes may not be drilled if early analytical results demonstrate an economically recoverable resource.

2.1.1 Drilling Activities

Surface disturbance, where earthwork and/or revegetation may be required, for the proposed project would include disturbance associated with the drill rig, and cuttings pit construction within the drill site, Surface disturbances are estimated to be a 100-foot by 100-foot square area (10,000 square feet) for drilling and pit construction at each proposed drill site, for a maximum total surface disturbance of 5.3 acres for all proposed drill sites (0.23 acre for each site). A representative drawing of a typical drill site is provided in Appendix A (figure 4). GCC selected drill locations on level terrain and as near as possible to existing area two-tracks and roads.

The 23 exploration drill holes would be rotary drilled, nominally, 5 to 6 inches in diameter to a projected depths where coal is expected to occur. Coring, using 3" cores, would be initiated at these depths.

Drill holes would be relatively shallow. The depth of target coal is expected to be around 330 feet or less, based on regional geology. A truck-mounted drill rig would be used to drill each hole. Based on past operations in the area, drilling would be by air.

Water would be used to provide a mist to control dust. Additional water may be used in the drilling if operations were to become unusually difficult. The water source (private well) for drilling is located 2 miles from the existing access road and is the same water source as used in the active mine.

Small cuttings pits would be necessary at all drill site locations. Cuttings pits would be constructed with a capacity adequate to contain the anticipated volume of cuttings (dependent upon core depth); the average estimated cuttings pit size would be approximately 6 feet wide by 10 feet long by 4 feet deep. When excavating the cutting pits, the topsoil would be removed and stockpiled prior to pit excavation to prevent contamination, minimize erosion loss, and to aid in reclamation. Cuttings pits would be located away from natural drainages to prevent natural runoff from entering pits. Excavated dirt from the pits would be stockpiled as berms around the pit to further minimize erosion off the drill sites. Active pits would be fenced as necessary with

temporary exclusion safety fencing to minimize the potential for wildlife, livestock or humans from accidentally falling or entering a pit. Pits will be reclaimed to pre-disturbance conditions, or as specified by the UMU Tribe or the BLM.

In general, any water-bearing zones would be plugged with cement. Cuttings will be returned to drill bore hole. The hole will be plugged, and per BLM/DRMS specifications. A diagram of a typical exploration drill hole after abandonment is provided in Appendix A (Figure 5).

Drilling will be accomplished with a truck-mounted core rig accompanied by a water truck, typically with a 3,000-gallon capacity. The water source (private well) for drilling is located 2 miles from the existing access road and is the same water source as used in the active mine. It is anticipated that one full water truck can service two to three drill holes. When necessary, a flatbed service truck and smaller pickup trucks would also be required for service and transportation to and from the drill sites.

Some or all drill holes may be geophysically logged. Historical data from drill holes outside, but relatively adjacent to, the exploration area list numerous 2-foot intercepts. However, based on historic mining data, it is not anticipated that drill holes in the exploration area would encounter increased thickness greater than the current mining activity. The coal thickness is expected to vary from 5 to 10 feet, based on the nearby mining operation. Assuming a 7.5-foot average coal thickness, an estimate of 29 pounds of coal per hole would be retained and submitted for laboratory analysis. This estimate is utilizing 80 pounds per cubic feet for a 7.5-foot column of 0.25-foot core sample (a cross sectional area of approximately 6 inches).

During the exploration drill-hole process, water is not expected to be encountered because the only known water table lies below the target coal seams. In the event water is encountered, it is anticipated that the cuttings pit or a tank truck would provide sufficient volume to handle this water. The drill hole would then be finished with air.

2.1.2 Access

The project area would be accessed from La Plata County Road 120 and from existing two-track roads on the tribal ranch properties. Travel routes within the project area are limited to two-tracks on UMU ranch property and short overland travel routes, also on UMU surface.

There are two types of access proposed to facilitate the exploration drilling: existing roads and overland travel. Approximately 14 miles of existing two-track roads occur throughout the project area. These roads are anticipated to provide sufficient access to the proposed overland travel routes with no improvements required. With the exception of approximately 10 feet of existing access to drill site GCC-14-20 that is on BLM administered lands, all other access, existing or overland, is on UMU tribal ranch property. All access routes are shown on the travel access map included in Appendix A.

Ten proposed drill sites (GCC-14-02, 03, 07, 13, 14, 15, 16, 17, 22, and 24) are proposed to be accessed via eight overland travel routes that would emanate from existing two-tracks. Overland

travel would require limited cutting/clearing of brush and rocks to access the proposed drill site location. No blading or grading would be necessary along these eight access routes. For the purpose of this analysis, it is assumed that all overland travel would be within an approximately 12 foot wide access route. The 8 proposed overland access routes total approximately 2 miles in length. Thus, the maximum affected area associated with overland travel is approximately 3 acres. All existing and overland access routes traverse mild slopes and areas with open grassy areas, sagebrush patches, and several small areas of patchy oak brush; no trees would be removed to facilitate overland travel to proposed drill site locations.

Table 2 shows the proposed disturbance in the project area, as well as mineral ownership.

Table 2. Surface Disturbance and Mineral Ownership for each Drill Location

Drill Site	Surface Ownership	Mineral Ownership	Proposed New Disturbance – drill sites (acres)
14-01	UMU	Federal	0.23
14-02	UMU	Federal	0.23
14-03	UMU	Federal	0.23
14-04	UMU	Federal	0.23
14-05	UMU	Federal	0.23
14-06	UMU	Federal	0.23
14-07	UMU	Federal	0.23
14-08	UMU	Federal	0.23
14-09	UMU	Federal	0.23
14-10	UMU	Federal	0.23
14-12	UMU	Federal	0.23
14-13	UMU	Federal	0.23
14-14	UMU	Federal	0.23
14-15	UMU	Federal	0.23
14-16	UMU	Federal	0.23
14-17	UMU	Federal	0.23
14-18	UMU	Federal	0.23
14-19	UMU	Federal	0.23
14-20	BLM	Federal	0.23
14-21	UMU	Federal	0.23
14-22	UMU	Federal	0.23

Drill Site	Surface Ownership	Mineral Ownership	Proposed New Disturbance – drill sites (acres)
14-23	UMU	Federal	0.23
14-24	UMU	Federal	0.23
Disturbance acreages			**5.28**

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2.1.3 Schedule and Timing

The estimated time for drilling per location is 30 hours, which includes mobilization and demobilization for each site. The proposed work schedule is a 5-day work week, with approximately 10 hours per day. With one drill rig expected to be utilized, the exploration activities could be completed in approximately one month after commencement, assuming that favorable weather conditions exist (i.e. no snow or heavy rains). Drilling is anticipated to begin in spring 2015.

Reclamation would take approximately 10 hours per drilling location. A total of 24 to 30 days is anticipated for the proposed project, with additional time included for unforeseen complications.

2.1.4 Reclamation

Upon completion of the project drilling and related activities, all drill holes would be backfilled, sealed, and abandoned. A detailed summary of all drilling reclamation activities follows.

2.1.4.1 Bore Holes

- Upon abandonment, in accordance with Drill Hole Plugging Procedures agreed to by BLM and CDRMS, bentonite chips or bentonite plug gel or similar seal would be established in the bottom of the hole, extending to within ten feet of the surface.
- A cement plug would be set in the hole ten (10) feet below the ground to within three (3) feet of the surface.
- Accumulations of drill cuttings would be buried in the excavated pit.
- Part of the abandonment process includes the use of bentonite mud to seal the borehole.
- At no time during the drilling and well abandonment process will any bentonite mud be placed in the cuttings pit.

2.1.4.2 Pits

- Any drilling mud left in the portable mixing tank after the borehole is completed would be used along with additional bentonite in the hole abandonment process.
- The pits may be temporarily fenced and allowed to dry before backfilling with previously excavated material.
- The excavated material would be returned to the pits in such a manner as to approximate the original soil profile, particularly as related to the near surface soils or top soil.

- During backfilling, the material would be mixed and compacted as it is replaced by running the equipment over the backfilled area during placement of successive lifts.
- Following backfilling, disturbance areas would be graded to their approximate original configuration or to a natural looking configuration that blends with the surrounding topography and the original surface drainage reestablished.

2.1.4.3 General

- All trash and debris would be removed from drill sites for disposal. Excavations, including pits, would be backfilled.

2.1.4.4 Any salvaged topsoil materials would be re-spread onto the re-graded surface and reseeding of the areas would take place using a seed mixture as specified by the UMU Tribe or a mix of native perennials as recommended by the BLM. Reseeding

- Seeding would take place in the fall or early spring.
- A temporary perimeter fence may be placed around reclaimed areas to prevent disturbance by livestock and wildlife.
- Monitoring of reseeding efforts would occur for two or three field seasons to determine stand success, re-seeding requirements and control of any noxious weeds.

2.1.4.5 Reclamation Success Criteria

- Vegetation cover in disturbed areas would be at least 70 percent of the vegetation cover in adjoining undisturbed areas. For example, if nearby undisturbed areas have approximately 75 percent vegetation cover, the reclamation success criteria would be 52.5 percent total vegetation cover.
- Vegetation cover would be comprised of species included in an landowner approved seed mix and other desirable species found in the surrounding area.
- Vegetation patchiness is acceptable, as long as there are no contiguous bare areas greater than about 3 feet by 3 feet (about 9 square feet).

Prompt reclamation, including reseeding of disturbed areas with an approved seed mix, would be finalized as soon as possible after project activities are completed to minimize the potential establishment of invasive and non-native species. Best management practices (BMPs) would be applied to prevent weed dispersal including cleaning vehicles and equipment prior to arrival at the drilling sites. Should listed invasive or non-native weeds establish in disturbed areas, then they would be treated/controlled by GCC per BLM Authorized Officer or the UMU Tribe.

2.2 Design Features

Design features are an integral part of the proposed action and include adherence to COAs, regulatory compliance, stipulations, and standard operating procedures. Design features are implemented to minimize, reduce, or avoid potential adverse impacts on resources.

The environmental effects are analyzed assuming that design features are in place and are effective in minimizing, reducing, or avoiding impacts. Standard stipulations address

comprehensive design features; whereas, site-specific stipulations concentrate on site-specific mitigation needs. Standard and project-specific design features include but are not limited to the following:

- All employees, contractors, and sub-contractors of the project will be informed by the project proponent that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment; and that it is illegal to collect, damage, or disturb cultural resources; and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 USC 470aa-mm).
- Vehicular traffic would be restricted to the proposed action disturbance areas and existing roads.
- During construction and drilling activities, GCC will control access to the drill sites and access roads. Once drilling and sampling activities have been completed, all temporary access routes would be reclaimed to BLM, DRMS and UMU standards.
- No ponderosa or fir trees would be removed for any reason. The UMU tribe has authorized the cutting of oak brush if necessary to access drill sites, although limited to no oak brush removal is planned because access routes were selected to avoid dense vegetative cover.
- All hazardous substances would be handled and disposed of according to federal law. Non-hazardous solid waste generated in the proposed drilling sites would be stored in appropriate containers and disposed at a permitted facility when necessary.
- Any lubricant, oil or grease, or fuel spills shall be reported immediately to the BLM. Spills would be removed from the spills area as quickly as possible using absorbent pads to collect leaking fluids, and if necessary, contaminated soils would be removed. All waste associated with a spill would be disposed off-site at a permitted facility. Spills would be cleaned to the authorized officer's satisfaction using standard hazmat procedures.
- GCC would apply for UMU Water Pollution Prevention Permits, if necessary.
- When possible, existing topography would be retained. Drill sites, including cuttings pits, would be reclaimed to match the existing topography after drilling activities are completed. BMPs such as berms, straw bales, and silt fences would be utilized, as necessary, to prevent erosion.
- No construction or routine maintenance activities would occur during periods when soil is too wet to support construction equipment adequately. If such equipment creates ruts in excess of 6 inches deep, then soil shall be deemed too wet.
- The UMU Tribe would be consulted prior to implementation of the proposed project.

- GCC or contracted personnel are required to have a safety meeting and be informed of potential interaction with livestock and wildlife and precautions required during construction activities at drilling locations.
- The permittee shall immediately notify the BLM Authorized Officer of any paleontological resources discovered on or within eight feet of the surface. The permittee shall suspend all activities in the vicinity of such discovery until notified to proceed by the Authorized Officer and shall protect the discovery from damage or looting.
- A red-tailed hawk (*Buteo jamaicensis)* nest located within 500 feet of the proposed GCC-14-01 drill-hole, would be monitored for nesting activity during construction/drilling. If the nest is active, construction and drilling operations could be put off until the young have fledged. This would eliminate the chances of the nest being impacted.
- If project timing would include construction during the migratory bird nesting timeframe for the project area (generally through July 15), potential impacts and modifications to project schedule needed to comply with the Migratory Bird Treaty Act would be discussed with BLM prior to exploration activities. Monitoring for migratory birds would occur if GCC wishes to proceed during the nesting season. If monitoring results in positive active nest data, appropriate avoidance buffers would be developed in coordination with BLM based on species and site-specific conditions.
- Straw wattles would be used to minimize erosion until the disturbances are revegetated.

2.3 Alternative B – No Action

The BLM NEPA Handbook (BLM 2008) states that for EAs on externally initiated proposed actions, the no action alternative is generally to reject the proposal or deny the license. This option is provided in 43 CFR 3410.3-1. The no action alternative provides a useful baseline for comparison of environmental effects (including cumulative effects) and demonstrates the consequences of not meeting the need for the action. The no action alternative would deny the GCC exploration license application and no exploration drilling would be authorized at this time.

2.4 Alternatives Considered, but Eliminated from Further Analysis

Final locations for all proposed drill locations and access routes were determined in the field by biologists and archaeologists working with surveyors, representatives from the UMU Tribe and GCC personnel and were selected to avoid impacts to sensitive biological and/or cultural resources. Two proposed drill sites and access routes were moved several hundred feet to avoid cultural resources. The spacing of exploration drill sites were made to both minimize the need for surface disturbing activities associated with access and drill site locations and to provide a representative cross section of the sub surface coal seams. Drill site spacing and locations were also intended to maximize use of existing area roads and to identify drill sites that were flat and easily accessible. Alternative access routes were evaluated for all eight locations requiring overland travel. Overland access routes were selected to minimize vegetation clearing, to avoid

ground disturbing activities and to utilize direct access from existing roads. Based on this pre-application field review and resource avoidance, no other action alternative was warranted. Additionally, as specified in Section 2.1.1, it is possible that some drill holes may not be drilled if early analytical results demonstrate an economically recoverable resource.

3. Affected Environment

3.1 Introduction

This section describes the environment that may be affected by implementation of the alternatives described in Section 2.0, as well as environmental consequences (direct, indirect, and cumulative). The no action alternative reflects the current situation within the project area and serves as the baseline for comparing the environmental impacts of the analyzed alternatives. Aspects of the affected environment described in this section focus on the relevant resources or issues identified as resources of concerns. Only the aspects of the affected environment that are potentially impacted are described in this section.

3.2 Resources Brought Forward for Analysis

3.2.1 Air Quality

Based on a review of the non-attainment areas reported by the USEPA (USEPA 2013b), the project area is in an attainment area for all state and federal air quality standards; non-attainment areas do not occur in La Plata County or any of its adjoining counties. Table 3 provides recent baseline air quality data from La Plata County. Non-attainment areas have criteria air pollution levels that persistently exceed the NAAQS. Projects that could affect special designation areas (i.e., wilderness areas and national parks) and non-attainment areas may require special consideration from the air quality regulatory agencies of the CDPHE and the USEPA.

Table 3, below, provides recent baseline air quality data for La Plata County. The closest Class I airshed to the proposed drill sites are the Mesa Verde National Park (located about 15 miles west of the project area) and the Weeminuche Wilderness Area (located about 35 miles northeast of the project area).

Table 3. La Plata County Baseline Air Quality

County	Pollutant	Standard	Monitored Values		
			2011	2012	2013
La Plata	CO	1-hour	1.3	0.8	1.7
La Plata	CO	8-hour	0.7	0.6	1
La Plata	NO2	1-hour	38	29	35
La Plata	O3	8-hour	0.077	0.069	0.072
La Plata	PM10	24-hour	50	59	34
La Plata	PM2.5	24-hour	11	9.3	5.3

County	Pollutant	Standard	Monitored Values		
			2011	2012	2013
La Plata	PM2.5	Annual	4.4	4.3	4.7

Source: BLM 2014

3.2.2 Soils

Soils in the project area were formed primarily in two kinds of parent material: residuum weathered from inter-bedded sandstone and shale and slope alluvium derived from sandstone and/or loess. Alluvial sediment is material that was deposited in river valleys and on mesas, plateaus, and ancient river terraces. The material has been mixed and sorted in transport and is widely ranging in mineralogy and particle size. Sedimentary parent material consists mainly of sandstone and shale bedrock. These shale and resistant sandstone beds form prominent structural benches, buttes, and mesas bounded by cliffs.

There are seven soil types, with varying erosion potential, that occur in the proposed drill site locations and access routes, as displayed in Table 4.

Table 4. Soils Occurring in Project Area

Drill Site (GCC 14-)	Soil Type	Erosion Potential
01; 02, 13	Archuleta-Sanchez complex, 12 to 65% slopes	Moderate water erosion, low wind erosion
03, 09, 10, 11, 12, 14, 16, 18, 19, 20, 21, 23, 24	Zau stony loam, 3 to 9% slopes	Low water erosion, Low wind erosion
04	Hesperus loam, 3 to 12% slopes	Moderate water erosion, moderate wind erosion
05	Goldvale very stony fine sandy loam, 15 to 65% slopes	Low water erosion, low wind erosion
06, 08	Coni loam, 4 to 25% slopes	Moderate water erosion, low wind erosion
07, 22, 17	Fortwingate-Rock outcrop complex, 6 to 25% slopes	No rating
15	Valto-Rock outcrop complex, 12 to 65% slopes	No rating

3.2.3 Wildlife

Game Species

Several hunting shacks have been observed in the vicinity of the proposed project area. Potential game species include elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), black bear (*Ursus*

americanus), mountain lion (*Puma concolor*), and wild turkeys (*Meleagris gallopavo*). According to the Colorado Parks and Wildlife (CPW) data, these species use the proposed project area year-round (CPW 2013).

The proposed project area includes resident elk populations, mule deer and elk winter range, and mule deer summer range. A resident population refers to a group of animals that use the area all year. Winter range refers to the location of 90 percent of individuals for an average of five winters out of ten. No critical winter areas or winter concentration areas have been identified in the project area. According to CPW, there are important migratory corridors for mule deer and elk to the east and west of the proposed exploration area. Mule deer and elk use woodland areas for cover and can use all other areas for browse. The land cover type affected in the project area includes approximately 8.58 acres of Rocky Mountain Gambel Oak-Mixed Montane Shrubland.

Black bears are common and often sighted in the project area. According to CPW data, the entire proposed project area is within black bear fall concentration areas. Black bears and black bear sign were observed during the field surveys in spring 2014.

The project area is also within CPW designated overall mountain lion range. Mountain lions have been observed in the proposed project area.

Wild turkey overall range encompasses the entire proposed project area (CPW 2013). Wild turkey winter range, winter concentration, and production areas are designated one mile northeast of the proposed project area. Several turkeys were observed during the 2014 field surveys.

Raptors

According to CPW data, bald eagle (*Haliaeetus leucocephalus*) winter range is located within the proposed project area and American peregrine falcon (*Falco peregrinus*) potential nesting areas are located within five miles of the project area. There are five active bald eagle nests and several undetermined and inactive nests within 12 miles of the proposed project area (CPW 2013). Bald eagle winter and summer forage, and winter concentration areas are also located within 10 miles of the project area. Bald eagle wintering grounds are typically associated with food availability, presence of roost sites that provide protection from inclement weather and absence of human disturbance, and known to travel 18 miles from their roost site to major foraging areas (Buehler 2000). The average home range of nesting American peregrine falcons in Colorado was found to be between 138 and 582 square miles (White et al. 2002). No bald eagles or American peregrine falcons were observed in the proposed project area. Several other raptors were observed including red-tailed hawk, northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*) nests. One active red-tailed hawk nest was observed within 500 feet of the proposed GCC-14-01 drill-hole location.

Existing disturbance in the project area is associated with existing roads and a transmission line. Existing disturbance covers a small portion of the project area.

3.2.4 Migratory Birds

Under the Migratory Bird Treaty Act (MBTA) (16 USC §703-712) and Executive Order 13186 federal agencies are required to consider management impacts to migratory non-game birds. All migratory birds are protected by the MBTA of 1918. The USFWS administers the MBTA, which prohibits the take of any active nest. While all migratory songbirds are protected by law, certain species have been determined to be at greater risk than others are. Approximately 278 avian species breed in Colorado. Of those, about 190 avian species breed in the Colorado Plateau physiographic region (CPIF 2000). Data collected through breeding bird surveys coordinated by the USFWS, as well as other private sector efforts, have provided the basis for the "Birds of Conservation Concern List" (USFWS 2008) and Colorado Partners in Flight (CPIF) to develop bird "watch lists." The CPIF organization has identified priority species of birds for the State of Colorado by habitat type.

The proposed project area lies within the Colorado Plateau physiographic region, as identified by the CPIF. The proposed project area and vicinity contains three of the habitat types addressed in these documents: mixed conifer, mountain shrubland, and ponderosa pine. Some of the birds listed as "highest priority" by the CPIF group, as well as USFWS "Birds of Conservation Concern" include the flammulated owl (*Psiloscops flammeolus*), Lewis's woodpecker (*Melanerpes lewis*), and Grace's warbler (*Setophaga graciae*).

Several bird species were observed during the biological surveys conducted during April 2014 including: wild turkey, piñon jay (*Gymnorhinus cyanocephalus*) red-tailed hawk, spotted towhee (*Pipilo maculatus*), western bluebird (*Sialia Mexicana*), and dusky grouse (*Dendragapus obscurus*). Species common to the habitat types above include Williamson's sapsucker (*Sphyrapicus thyroideus*), house wren (*Troglodytes aedon*), Virginia's warbler (*Vermivora virginiae*), green-tailed towhee (*Pipilo chlorurus*), sage thrasher (*Oreoscoptes montanus*), Lewis's woodpecker (*Melanerpes lewis*), northern flicker (*Colaptes auratus*), pygmy nuthatch (*Sitta pygmaea*), flammulated owl (*Psiloscops flammeolus*), olive-sided flycatcher (*Contopus cooperi*), and western tanager (*Piranga ludoviciana*).

3.2.5 Vegetation Resources

Dominant vegetative communities occurring within the proposed project area and vicinity are classified as Rocky Mountain Gambel oak-mixed montane shrublands, Rocky Mountain ponderosa pine woodland, Rocky Mountain montane mesic mixed conifer forest and woodland, and Colorado Plateau piñon-juniper woodland, Rocky Mountain Aspen Forest and Woodland, (Lowery 2005). All of the proposed project disturbance (8.58 acres) would occur in the Rocky Mountain Gambel oak-mixed montane shrublands series, which is the most abundant vegetative community occurring in the project area and vicinity. This series occurs mostly on rolling hills and above drainages in the project area and vicinity. Dominate vegetation occurring within this series at the drill site locations includes Gambel oak (*Quercus gambelii*), blue grama (*Bouteloua*

gracilis), and snowberry (*Gaultheria*) as well as a ground cover that varies considerably from site to site and ranging from 10 to 70 percent.

Rocky Mountain montane dry-mesic and mesic mixed conifer forest and woodland communities occur in the vicinity of most drill site locations. This series occurs mostly in drainages and drainage bottoms. Species associated with the vegetative community includes Douglas fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) with understory species such as squirreltail (*Elymus elymoides*), slender wheatgrass (*Elymus trachycaulus*), Oregon grape (*mahonia repens*), and buckwheat (*Eriogonum*).

The Colorado Plateau piñon-juniper woodland community includes piñon pine (*Pinus edulis*) and Rocky Mountain juniper (*Juniperus scopulorum*) with understory species such as gamble oak, serviceberry (*Amelanchier alnifolia*), black sagebrush (*Artemisia nova*), and rabbitbrush (*Ericameria nauseosa*). This series occurs in few patches near Ponderosa Pine Woodland Communities in the project area and vicinity.

Other vegetation communities occurring in small patches in the vicinity include the Rocky Mountain Aspen Forest and Woodland and the Rocky Mountain Ponderosa Pine Woodland.

3.2.6 Invasive Species and Noxious Weeds

Two invasive, noxious weed species were observed within previously disturbed portions of the project area. Musk thistle (*Carduus nutans*) and Canada thistle (*Cirsium arvense*) are State of Colorado-listed and BLM-listed Class B species. Class B weeds are managed for containment at the local government level. Musk thistle and/or Canada thistle were observed along the existing access road to Drill Sites GCC-14-03, 04, 16, 18, and 24.

3.2.7 Socioeconomics and Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," issued on February 11, 1994, declares that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States," including Native American tribes. The Executive Order and CEQ guidance on incorporating environmental justice into the NEPA analysis applies where a proposed action is likely to have disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes (CEQ, Environmental Justice Guidance Under the NEPA (Dec. 10, 1997). The analysis considers environmental, human health, economic, and social impacts, taking into account mitigation and participation by the affected community (CEQ Environmental Justice Guidance, § III.B).

Table 5 illustrates the total proportion of the low income, Hispanic or Latino, and Native American populations for the U.S., Colorado, La Plata County, and southwest La Plata County. When compared to the nation and to Colorado, U.S. Census Bureau (USCB 2012) summary data

for La Plata County does not indicate there is a disproportionate low-income population in the southwestern quadrant of La Plata County where the proposed project would be located. Likewise, the Hispanic or Latino population proportion in the area is lower than the county, state, and national proportions. The Native American proportion of the population in Southwestern La Plata County exceeds the state and national rates, but is lower than La Plata County as a whole.

Table 5. Demographic Characteristics of the United States, Colorado, La Plata County and the SW Quadrant of La Plata County

Subject	United States	Colorado	La Plata County	Southwest Quadrant of La Plata County
Total Population	301,333,410	633,878	49,222	5,773
Percent of Population that is Hispanic/ Latino	16.4	20.6	11.9	11.2
Percent of Population that is Native American or Alaska Native	1.6	2.1	7.2	3.9
Poverty Rate	14.9	12.9	11.1	7.9

Source: USCB American Community Survey 2012

3.2.7.1 Mitigation Measures and Residual Impacts

No mitigation measures for social or economic resources have been identified for the proposed action.

3.2.8 Water Resources/Water Quality

The proposed project is located in the Upper Colorado River Hydrologic Region and is part of the San Juan River sub-region. The sub-watersheds located in the project area include Cherry Creek, La Plata River, and Alkali Gulch. The nearest perennial water source is the La Plata River, which is located approximately 3 miles east of the project area. The project area is bisected by several named and unnamed ephemeral and intermittent washes. Deadman Gulch and Spring Creek Gulch flow east to west and are located along the northern border of the proposed project area. West Roberts Canyon trends north to south and borders the eastern project area. East Alkali Gulch trends northeast to southwest and traverses through the middle of the project area. West Alkali Gulch bisects the western portion of the project area and trends north to south. Devils Canyon and Reservoir Canyon also traverse the far western boundary and trends east to west. Drainage from the project area generally flows west, southwest towards Cherry Creek, located 2.6 miles west. All drainages are characterized as intermittent or ephemeral; several have stock ponds associated with them.

Proposed drill-hole locations would be located no closer than 200 feet from any intermittent or ephemeral channels. No wetlands occur at any of the proposed drill site locations. No jurisdictional wetlands or other waters of the U.S. are located at or near any of the 23 drill site

locations or along access roads. No ditches or canals are located within 0.5 mile of any of the drill site locations.

According to a search performed of the Colorado Division of Water Resources Well Permitting database for the proposed project area and vicinity (1-mile radius from all of the 23 drill locations), nine water wells are located within a 1-mile radius of the proposed project area. Of the nine wells, one water well permit application was denied, and one well does not have complete records. Of the nine wells with records, well depth ranges from 16 feet to 1000 feet and include static levels varying from 16 feet to 525 feet (DWR 2014).

The primary aquifers in the area are major alluvial aquifers (BLM 2013b p.261). These are located in sedimentary fill material in river valleys. Water quality is typically good, but highly variable.

The first formation that serves as a widespread aquifer in the area is the Cliff House Sandstone. The aquifer is located down-dip of the project area. Small, localized, perched aquifers are known to occur in the Cliff House Sandstone above the coal seam. They are not typically artesian. Any water would be contained in the cuttings pit.

4. Environmental Effects

4.1 Introduction

This chapter provides an analysis of potential environmental impacts of the Proposed Action Alternative and the No Action Alternative. It is assumed that the Proposed Action would be carried out as described in Chapter 2 with specified design criteria.

Direct effects, are those which are caused by the action and occur at the same time and place. Indirect effects are those which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).

4.2 Direct and Indirect Effects

4.2.1 Alternative A – Proposed Action

4.2.1.1 Air Quality

The excavation of drilling cutting pits and the actual drilling activities would result in air pollutant emissions. Short-term increases to both criteria and non-criteria pollutants emissions would occur due to fugitive dust from soil disturbing activities and the use of equipment with combustion engines. These impacts would be localized at each drill site as it is being drilled and last for the duration of the drilling activities, approximately two months.

An estimate of air pollutant emissions was prepared using the BLM Oil and Gas Emission Tool adapted for the proposed action (BLM 2014). The inventory estimates that amounts of sulfur dioxide SO_2, particulate matter less than 2.5 microns ($PM_{2.5}$) and 10 microns (PM_{10}) in diameter, CO, oxides of nitrogen (NO_x), volatile organic compounds, carbon dioxide (CO_2), methane (CH_4), and nitrous dioxide (N_2O) are likely to be emitted during the proposed action (See Table 6).

Table 6. Emission Inventory (Tons)

Emissions Generating Activity	PM_{10}	$PM_{2.5}$	NO_x	SO_2	CO	VOCs	CO_{2e}
Road Travel and Construction							
Fugitive Dust	4.36	0.44	n/a	n/a	n/a	n/a	n/a
Wind Erosion	6.84	1.03	n/a	n/a	n/a	n/a	n/a
Exhaust							
Heavy Construction Equipment	0.21	0.20	4.07	0.08	1.43	0.35	256.15

Emissions Generating Activity	PM_{10}	$PM_{2.5}$	NO_x	SO_2	CO	VOCs	CO_{2e}
On-Road Vehicles	0.87	0.30	3.82	0.02	1.37	0.25	21.45
Reclamation	0.30	0.04	0.12	0.00	0.10	0.01	14.34
Total Emissions	12.58	2.01	8.01	0.10	2.89	0.61	291.94
Total La Plata County Emissions in 2011. (US EPA 2013)	2,330	920	4,838	128	17,116	2,740	n/a

Note: PM10 = particulate matter at 10 micrometers in diameter; PM2.5 = particulate matter at 2.5 micrometers in diameter; NOx = oxides of nitrogen; SO2 = sulfur dioxide; CO = carbon monoxide; VOCs = volatile organic compounds; CO2e= carbon dioxide equivalent

All impacts to air quality would be minor, short term, and temporary. With respect to the criteria pollutants (SO_2, PM_{10}, $PM_{2.5}$, CO, NO_x, and VOCs) and greenhouse gas (CO_2, CH_4, and N_2O) emissions, the levels emitted on an annual basis are not significant and do not warrant any further analysis when considered against regional emissions (specific source categories) and recent monitoring data. La Plata County emissions from the most recent USEPA National Emissions Inventory (USEPA 2013a) have been included to provide additional context for the reader. The estimated total emissions for the proposed action amount to much less than one percent of total NAAQS pollutant emissions in La Plata County annually. For these reasons, increases in criteria and non-criteria pollutants would be unlikely to result in an exceedance the NAAQS.

Greenhouse Gases

The assessment of greenhouse gas (GHG) emissions and climate change is in its formative phase; therefore, it is not possible for BLM to know with confidence the net impact to climate for the proposed action. However, the Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that warming of the climate system is unequivocal and most of the observed increase in globally averaged temperatures since the mid- twentieth century is very likely due to the observed increase in anthropogenic (man-made) greenhouse gas concentrations. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. GHG emissions were estimated for the proposed action and they are included in Table 6 in terms of tons of carbon dioxide equivalent (CO_2e), a combined measure of GHG emissions based on global warming potential for each GHG.

4.2.1.2 Soils

Implementation of the proposed project would result in temporary disturbance, loss, compaction, and mixing of soils within the proposed project area. An undetermined amount of soil erosion by both wind and water would continue in the project area until reclamation occurs. Direct impacts to project area soils would be low and short term as surface disturbances are relatively minor and dispersed. The implementation of project design features, such as installation of erosion control wattles and limiting activities to proposed disturbance areas, would eliminate potential impacts

to soils beyond proposed disturbance areas. Indirect impacts related to resources were not identified.

4.3.1.3 Wildlife

Direct effects to big-game species would include temporary disturbance and displacement during construction and a temporary loss of 5.52 acres of forage and cover habitat until reclamation is successful. Noise, human presence, and vehicle traffic would temporarily displace big game from preferred habitats during project activities. Possible reactions to disturbance include increased alertness and agitation, moving away from noise, physiological effects (increased heart rate and respiration), and changing normal feeding patterns. This response would most likely occur near concentrated project activities. Research has shown that mule deer may avoid areas up to 0.25-mile of existing disturbances (Watkins et. al. 2007) and deer and elk may shift their distribution on winter range to lower quality habitat to avoid disturbance as development progresses (Sawyer 2009). An indirect effect of displacement due to the proposed project can result in decreased productivity depending on the length of disturbance, the season of disturbance, and the availability of escape areas.

Impacts to wildlife habitat (both game and raptor) would include short-term loss of natural vegetation and changes in species composition of vegetation. The direct habitat loss would be short term, as reclaimed areas would recover their values as wildlife habitat. Most species observed in or expected to inhabit the area would be minimally affected by slight changes in vegetation composition.

No impacts are expected to the active red-tailed hawk nest near proposed drill point GCC-14-01 due to design features related to nest monitoring and activity avoidance to eliminate potential impacts to breeding, nesting and fledging timeframes. To minimize potential impacts to migration and winter elk and mule deer, CPW recommends avoiding exploration activities between December 1 and April 15. Additional timing limitations for other raptors and migratory birds are detailed in the Tres Rios Field Office Fish and Wildlife Clearance Report included in Appendix B.

4.2.1.3 Migratory Birds

The intent of the MBTA is to minimize the “take” of migratory birds through consideration in land use decisions and in collaboration with the USFWS. The implications of the proposed project have been assessed along with the site visit for evaluating potential impacts to protected species. Migratory birds common to the southwestern U.S. are likely to be present in the project area during spring time drilling operations.

The proposed project would result in the temporary loss of 5.52 acres of mountain shrubland habitat for bird species protected under the MBTA. Direct impacts would include modification of foraging and nesting habitat for birds; similarly, there may be indirect impacts related to disturbance to individuals from noise and increased human presence during preparation and drilling activities. Other impacts would include avoidance of the area by birds during drilling and

reclamation activities due to increased human presence, vehicles, and associated noise. Following the implementation of the design features related to migratory bird protections and mitigations measures outlined in the Fish and Wildlife Clearance Report included in Appendix B, potential impacts to migratory birds are expected to be low and short-term based on very limited vegetation removal and the short duration of time spent at any given drill site. Further, most surface disturbance would occur in areas of flat terrain with sparse vegetative cover. No long-term loss of migratory bird habitat is expected due to minimal impacts to area vegetation and nesting substrate and because reclamation and revegetation is expected to occur within two months of project initiation.

4.2.1.4 Vegetation Resources

Direct impacts associated with the proposed action would involve removing approximately 5.52 acres of undisturbed vegetation of the Rocky Mountain Gambel oak-mixed montane shrubland community type. No trees are proposed for removal. Following drilling, the proposed drill pad area would be reseeded with a UMU-specified seed mix. Reclamation monitoring and success criteria described in the proposed action would further limit potential impacts to vegetation. Indirect impacts would result from short-term changes in the density and composition of project area vegetation communities. However, as less than 0.23 acres would be impacted at each drill location, the resulting effect will not be noticeable at a landscape level. Disturbed areas would be expected to be fully reclaimed within 1 to 2 years.

4.2.1.5 Invasive Species and Noxious Weeds

Invasive species are generally tolerant of disturbed conditions; disturbed soils at drill sites and along temporary access routes may provide an opportunity for the introduction and establishment or spreading of non-native invasive species. During pit excavation, drilling and reclamation, noxious weed sources could be introduced to disturbed areas from vehicles, equipment, people, wind, water, or other mechanisms. This potential impact is expected to be minor due to the small area disturbed by the proposed action and short-term as GCC would be responsible for monitoring and controlling any non-native invasive weed species that establish in the project area as a result of implementation of the proposed action.

4.2.1.6 Socioeconomics and Environmental Justice

There will be no disproportionate adverse impacts to minority and low-income populations in the proposed project area as census data for La Plata County does not indicate that there is a disproportionate low-income population in the southwestern quadrant of La Plata County; therefore, an Environmental Justice analysis is not warranted. The local economy may have some direct but minimal, short-term benefit from support services to the drilling crews, but only a small number of people would be affected. No additional demand for housing or municipal services would be anticipated. Indirect benefits to the surrounding economy may occur if the assessment of coal quality, geotechnical and geological data about the coal resource leads to additional exploration in the project area. The indirect effects could include effects due to overall

employment opportunities related to the coal mining service support industry in the region as well as the economic benefits to state and county governments and private mineral lease owners related to royalty payments and severance taxes.

4.2.1.7 Water Resources/Water Quality

Direct impacts as a result of the proposed action would temporarily expose 5.52 acres of soil as a sediment source. Exposure of soils, particularly on slopes, could lead to an increase in an undetermined (but likely small) amount of sediment transport, particularly during and following storm events. An indirect effect would include slight alterations in project area drainage patterns that may lead to an increase in sediment transport. These increases in sediment transport into the drainages would be minimized, reduced, or avoided through implementation of BMPs and other preventive measures described in 4.3.1.2 and in the project design features. These measures include erosion control, disturbance limits and as re-establishment of vegetation through reclamation activities. No disturbance is proposed within drainages or washes.

A study conducted by CDS Environmental Services, LLC (CDS) concluded that water wells in the vicinity are finished into water tables, which are below the coal seam that GCC is currently mining at King II Mine (CDS 2013). This is also the case for the 23 proposed exploration drill holes. CDS found there would be no direct or indirect impacts to local or regional aquifer water tables in the vicinity of the drill-hole locations (CDS 2013).

Accidental spills could potentially impact local water quality. Potential for surface water quality impacts downstream from accidental spills would be short term (during construction). Potential impacts to groundwater quality from leaks or spills resulting from the proposed action would be low and long term following the implementation of design features eliminate or limit the potential for a hazardous material release.

4.3 Cumulative Effects Analysis

Federal regulations at 40 CFR 1508.7 define cumulative impacts as: "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

The past and present uses of the proposed license area are coal mining (surface and underground), historic oil and gas exploration and limited development, grazing and wildlife. Reasonably foreseeable future activities are: continued underground mining, continued coal exploration, continued surface coal mine reclamation, continued oil and gas operations, wildfire, logging, vegetation management, grazing, recreation, and wildlife.

If the exploration data shows that the coal resource could be economically developed, GCC would be required to apply for 1) a lease through a competitive process, and 2) a mine plan to develop that coal, if they are awarded the lease. The cumulative impacts of leasing and mining

the coal are not analyzed because at this time, it is speculative to assume that the data obtained from the exploration data would yield favorable information for leasing the federal coal.

For most resources, the cumulative impact area is the proposed 4,846-acre exploration area. A larger cumulative impact area is defined below for air quality and socioeconomics and environmental justice.

4.3.1 Air Quality Cumulative Effects

For air quality, the cumulative impacts analysis area is defined as the Four Corners region as designated by the Four Corners Air Quality Group and analyzed in Air Quality Modeling Study for the Four Corners Region – Final Revised Report August 2009 (Environ 2009). The proposed action would result in minor, short-term air quality impacts. Considering the past, present and reasonable foreseeable developments described above, cumulatively, no long-term air quality impacts are expected, as all anticipated air quality impacts would be short term (less than two months in duration) and minimal (refer to Table 6).

4.3.2 Soils Cumulative Effects

The cumulative impact area for soils is the proposed exploration area. The proposed action is not expected to contribute appreciably to cumulative impacts to soils when added to past, present, and reasonably foreseeable actions.

4.3.3 Wildlife Cumulative Effects

The cumulative impact area for wildlife is the proposed exploration area. Ongoing grazing and other UMU Tribe management activities would likely continue and have more of an influence on habitat condition and use by wildlife than activities associated with the exploration program. With overall temporary habitat disturbance (2 months) from the proposed action and low level of anticipated impacts from past, present and reasonably foreseeable developments described above, cumulative impacts to wildlife would be minimal. With the design features and reclamation activities incorporated into the proposed action, habitat impacts may affect individual wildlife species (including big game), but would not adversely impact species populations that inhabit the proposed project area.

4.3.4 Migratory Birds Cumulative Effects

The cumulative impact area for migratory birds is the proposed exploration area. Other reasonably foreseeable actions within the proposed project area that could impact migratory birds would include livestock grazing, wildfire, and vegetation management. The cumulative impact of the proposed action on migratory birds would be negligible based on the minor habitat impacts described and due to the availability of suitable habitats throughout the project area.

4.3.5 Vegetation Resources Cumulative Effects

The cumulative impact area for vegetation is in the proposed exploration area. The proposed action would not contribute to a loss of vegetation communities in the area, as all areas would be

reclaimed. Changes in vegetation composition would cumulatively impact approximately 5.52 acres across 23 proposed drill sites of undisturbed vegetation. As stated in Section 4.3.1.4, 0.24 acres of impact at 23 drill sites would hardly be noticeable on a landscape level post reclamation.

4.3.6 Invasive Species and Noxious Weeds Cumulative Effects

The cumulative impact area for invasive species is the proposed exploration area. The proposed action would result in an incrementally small increased risk for spread of noxious weeds. The potential for invasive, non-native species to establish could cumulatively impact 5.52 acres of disturbed ground from the proposed action. Recreational activities as well as cattle grazing in the project area could also result in the spread of noxious weeds. However, following the implementation of BMPs described in the project design features and GCC's commitment to area weed control, cumulative impacts are anticipated to be minimal.

4.3.7 Socioeconomics and Environmental Justice

The cumulative impact area for socioeconomics and environmental justice is southwestern La Plata County. The proposed action is not expected to contribute appreciably to cumulative impacts to the socioeconomic characteristics of the area when added to past, present, and reasonably foreseeable actions.

4.3.8 Water Resources/Water Quality

The cumulative impact area for water resources is the proposed exploration area. Cumulative impacts to surface waters would be related to short-term sedimentation. The surface-disturbing activities, other than the proposed action, that may cause accelerated erosion include (but are not limited to) road maintenance, vegetation manipulation and management activities, prescribed and natural fires, and livestock grazing. Because the proposed action would have a negligible impact on downstream surface water quality, the cumulative impact would be negligible when added to other past, present, and reasonably foreseeable activities downstream.

5. Consultation and Coordination

5.1 Tribes, Individuals, Organizations, or Agencies Consulted

On September 25, 2014, the BLM conducted external scoping by way of sending scoping letters to adjacent land owners and to other expressly interested parties to solicit comments during the data gathering and analyses process from persons, groups, and organizations that may have an interest, and Local, State and other Federal agencies with control or an interest in the exploration and surrounding areas. Only 5 scoping comments have been received to date.

The BLM initiated cultural and Native American consultations also on September 25, 2014, by sending scoping letters to 33 Native American tribes. Table 7, below, lists all persons, agencies, and organizations that provided input and consultation regarding this EA.

Table 7. List of All Persons, Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
Scott T. Clow	UMU Environmental Programs Director	Identification of Tribal Issues
Gordon Hammond	UMU Energy Director	Identification of Tribal Issues
Jerald Peabody	UMU Natural Resources Department Director	Identification of Tribal Issues
Troy Ralstin	UMU Executive Director	Identification of Tribal Issues
Manual Heart	UMU Tribal Council Chairman	Identification of Tribal Issues
Terry Knight	UMU Cultural Resources	Tribal Cultural Resources
Celene Hawkins	UMU Legal	Identification of Tribal Issues
Seth McCourt	GCC Energy	Technical Exploration Details
Tom Bird	GCC Energy	Technical Exploration Details
Trent Peterson	GCC Energy	Technical Exploration Details
Lyman Clayton	BIA Towaoc	
Rebecca Schwendler	PaleoWest	Cultural Resources

Notes: UMU = Ute Mountain Ute tribe

5.2 List of Preparers

BLM TRFO and Colorado State Office staff specialists who determined the affected resources and ho contributed further analysis in the body of this EA are listed below. Table 8 lists agency and consultants that contributed to the preparation of this EA.

5.2.1 BLM Preparers

Table 8. List of BLM Preparers

Name	Title
Helen Mary Johnson	BLM Minerals
Gina Jones	BLM NEPA Lead
Bruce Bourcey	BLM Archaeologist
Chad Meister	Colorado State BLM Air Quality
Nathanial West	BLM Wildlife
Kyle Free	Colorado State BLM Minerals

Notes: BLM = Bureau of Land Management; TRFO = Tres Rios Field Office

5.2.2 Non-BLM Preparers

Table 9. List of Non-BLM Preparers

Name	Title
Mike Fitzgerald	Project Manager/Principal, Ecosphere
Amanda Blanchard	Biologist, Ecosphere
Carolyn Dunmire	Air Resources, Ecosphere

Notes: BLM = Bureau of Land Management; Ecosphere = Ecosphere Environmental Services

6. References, Glossary, and Acronyms

6.1 References Cited

Bureau of Land Management (BLM). 1985. San Juan/San Miguel Planning Area Resource Management Plan. Montrose District, CO.

BLM. 1991. San Juan/San Miguel Resource Management Plan Amendment. Montrose, CO.

BLM. 2008. NEPA handbook H 1970 1 [BLM 1/30/2008]. Washington, D.C.

BLM. 2013a. Colorado Bureau of Land Management. Comprehensive Air Resource Protection Protocol (CARPP). Denver, Colorado. September.

BLM. 2013b. Land and Resource Management Plan (LRMP) and Final Environmental Impact Statement (FEIS). Dolores, CO.

BLM. 2014. Colorado Bureau of Land Management. Oil and Gas Air Emissions Tool. Provided by Chad Mister Colorado State BLM – Air Quality by personal communications on June 3, 2014.

Buehler, D. 2000. Bald Eagle (*Haliaeetus leucocephalus*), The Birds of North America Online (A. Poole, Ed.) Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Available at http://bna.birds.cornell.edu/bna/species/506.

CDS Environmental Services LLC (CDS). 2013. Final Report – Analytical Activities in Response to Neighborhood Comments. Durango, CO

Colorado Division of Water Resources (DWR). 2014. Colorado's Well Permit Search. Available at http://www.dwr.state.co.us/WellPermitSearch/default.aspx

Colorado Parks and Wildlife (CPW). 2013. Natural Diversity Information Source (NDIS). Wildlife data updated October 2013.

Colorado Partners in Flight (CPIF). 2000. Colorado Land Bird Conservation Plan. Available online at http://www.rmbo.org/pif/bcp/intro/exsum.htm.

Environ International Corporation (Environ). 2009. Air Quality Modeling Study for the Four Corners Region. Revised Report – August 2009. Prepared for the New Mexico Environment Department. Air Quality Bureau. Available at: http://www.nmenv.state.nm.us/aqb/4C/Documents/FinalRepRev20090806.pdf. Accessed June 2014.

IPCC. Intergovernmental Panel on Climate Change. 2007. IPCC Fourth Assessment Report: Climate Change 2007. Synthesis Report. Available at: https://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html, Accessed June 2014.

Mapping Methods, RS/GIS Laboratory, Utah State University, Logan, Utah.

PaleoWest Archaeology. (2014). Class III Cultural Resource Inventory of Twenty-four Drill Hole Locations, La Plata County, Colorado. Technical Report No. 14-51. June 2014.

Sawyer, H., R.M. Nielson, F. Lindzey, and L.L. McDonald. 2006. Winter Habitat Selection of Mule Deer Before and During Development of a Natural Gas Field. Journal of Wildlife Management 70(2); 396-403.

USCB (U.S. Census Bureau). 2012. American Community Survey 2008-2012. Available online at www.census.gov. Accessed June 2014.

U.S. Environmental Protection Agency (USEPA). 2013a. The Green Book Nonattainment Areas for Criteria Air Pollutants as of December 5, 2013. Available at: http://www.epa.gov/airquality/greenbook/. Accessed in June 2014.

USEPA 2013b. 2011 National Emissions Inventory Data. Version 1 (released September 30, 2013). Available at: http://www.epa.gov/ttnchie1/net/2011inventory.html. Accessed in June 2014.

USFWS. 2008. Birds of Conservation Concern. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. Available at http://www.fws.gov/migratorybirds/.

Watkins, B.E., C.J. bishop, E.J. Bergman, A. Bronson, B. Hale, B.F. Wakeling, L. H. Carpenter, and D. W. Lutz. 2007. Habitat Guidelines for Mule Deer: Colorado Plateau Shrubland and Forest Ecoregion. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies.

White, C. M., N. J. Clum, T. J. Cade, and W. G. Hunt. 2002. Peregrine Falcon (*Falco peregrinus*). A. Poole [Ed.], The birds of North America online. Cornell Laboratory of Ornithology, Ithaca, New York. Available at http://bna.birds.cornell.edu/bna/species/660.

6.2 List of Acronyms Used in this EA

BLM	Bureau of Land Management
BMP	Best Management Practices
CDPHE	Colorado Department of Public Health and Environment
CDS	CDS Environmental Services, LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
COAs	Conditions of Approval

CPIF	Colorado Partners in Flight
CPW	Colorado Parks and Wildlife
DR	Decision Record
EA	Environmental Assessment
Ecosphere	Ecosphere Environmental Services
EIS	Environmental Impact Statement
FLPMA	Federal land Policy Management Act
FONSI	Finding of No Significant Impact
GCC	GCC Energy, LLC
GHG	Greenhouse gas emission
LRMP	Land and Resource Management Plan
MBTA	Migratory Bird Treaty Act
MLA	Mineral Leasing Act
N_2O	nitrogen dioxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_x	oxides of nitrogen
NOI	notice of intent
PaleoWest	PaleoWest Archaeology
PL	Public Law
PM_{10}	particulate matter emissions that are less than 10 microns in diameter
$PM_{2.5}$	particulate matter emissions that are less than of 2.5 microns in diameter
RMP	Resource Management Plan
SO_2	sulfur dioxide
SUA	surface use agreement
TRFO	Tres Rios Field Office
UMU	Ute Mountain Ute
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Appendix A– Maps and Diagrams

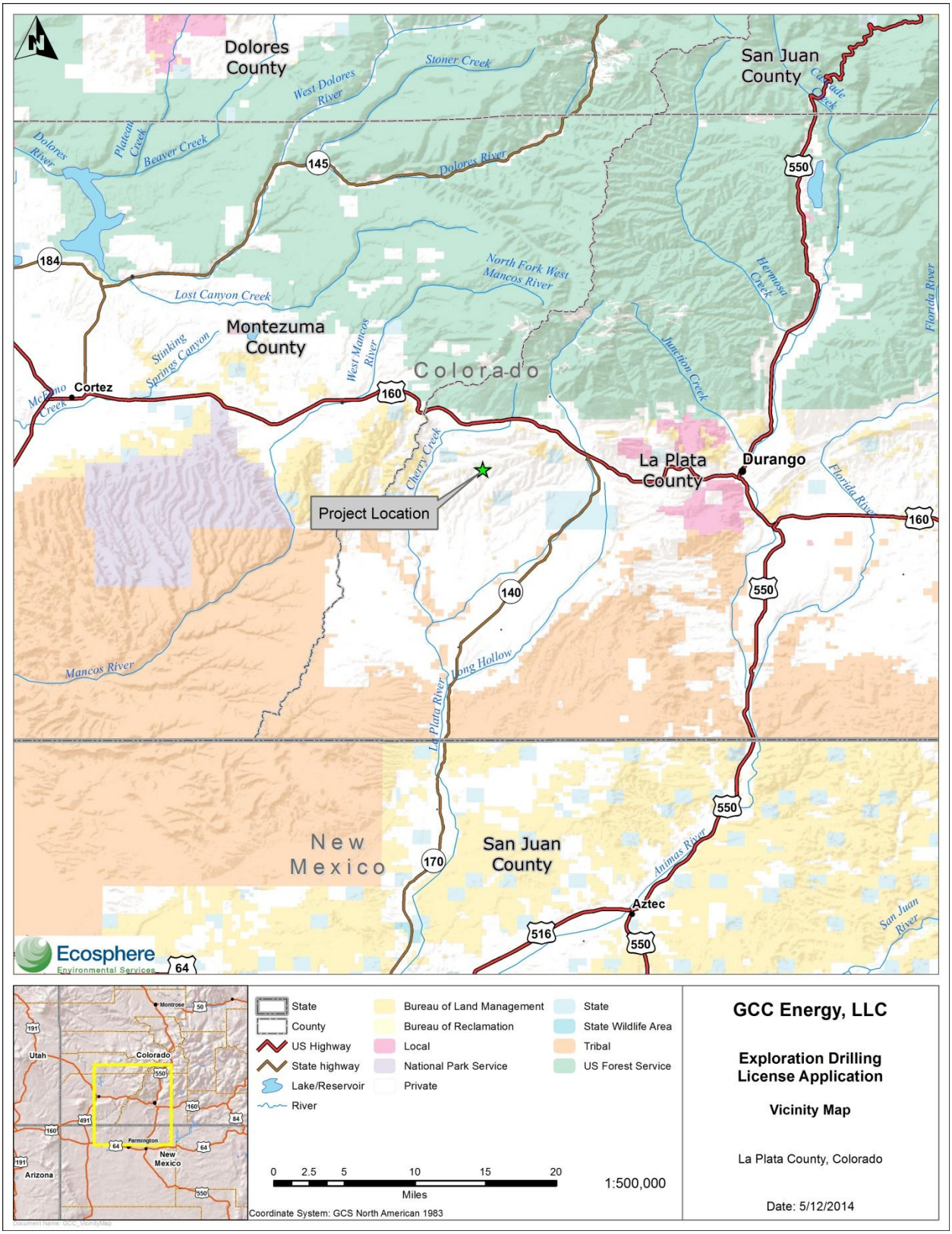

Figure 1. Vicinity Map

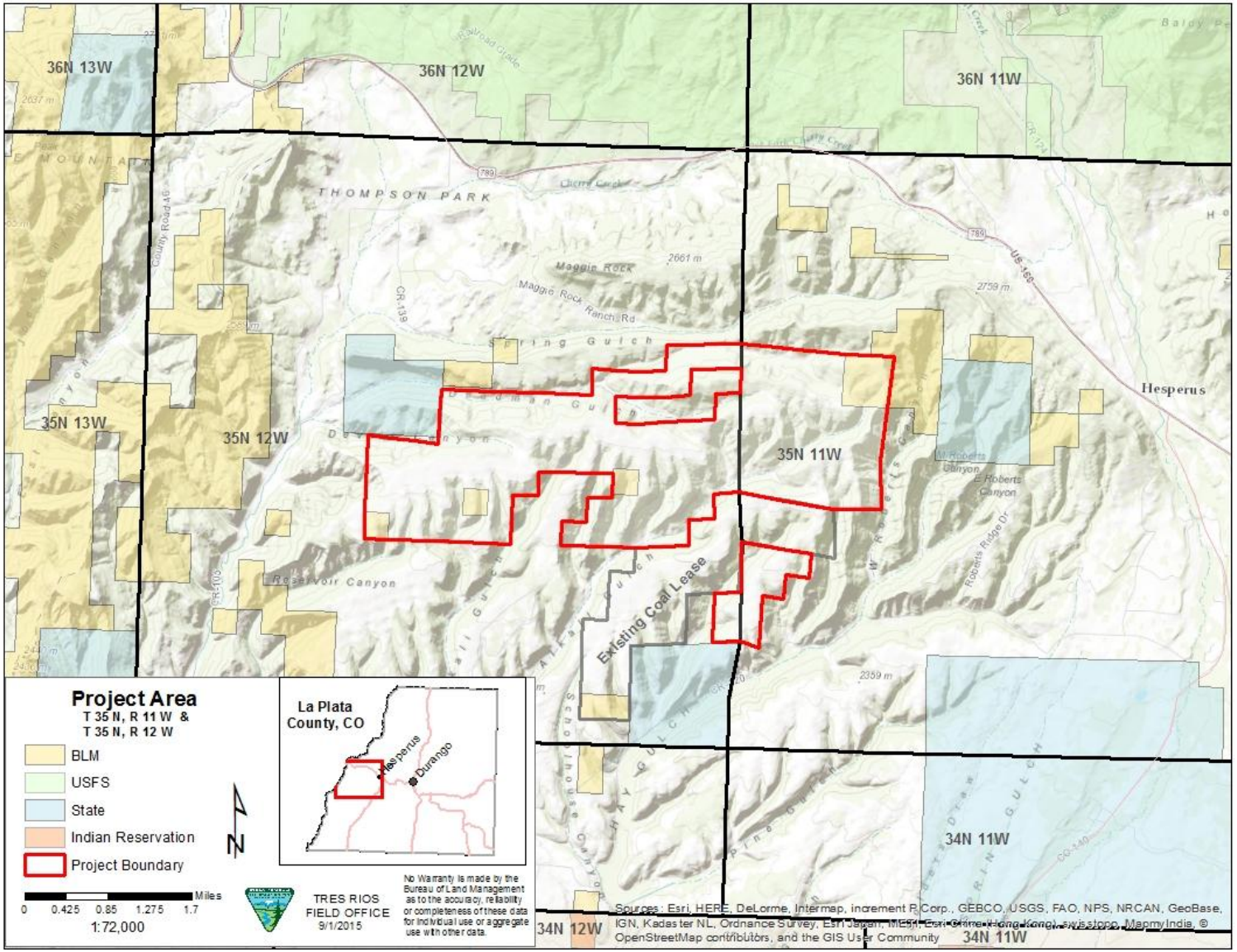

Figure 2. Project Area Map

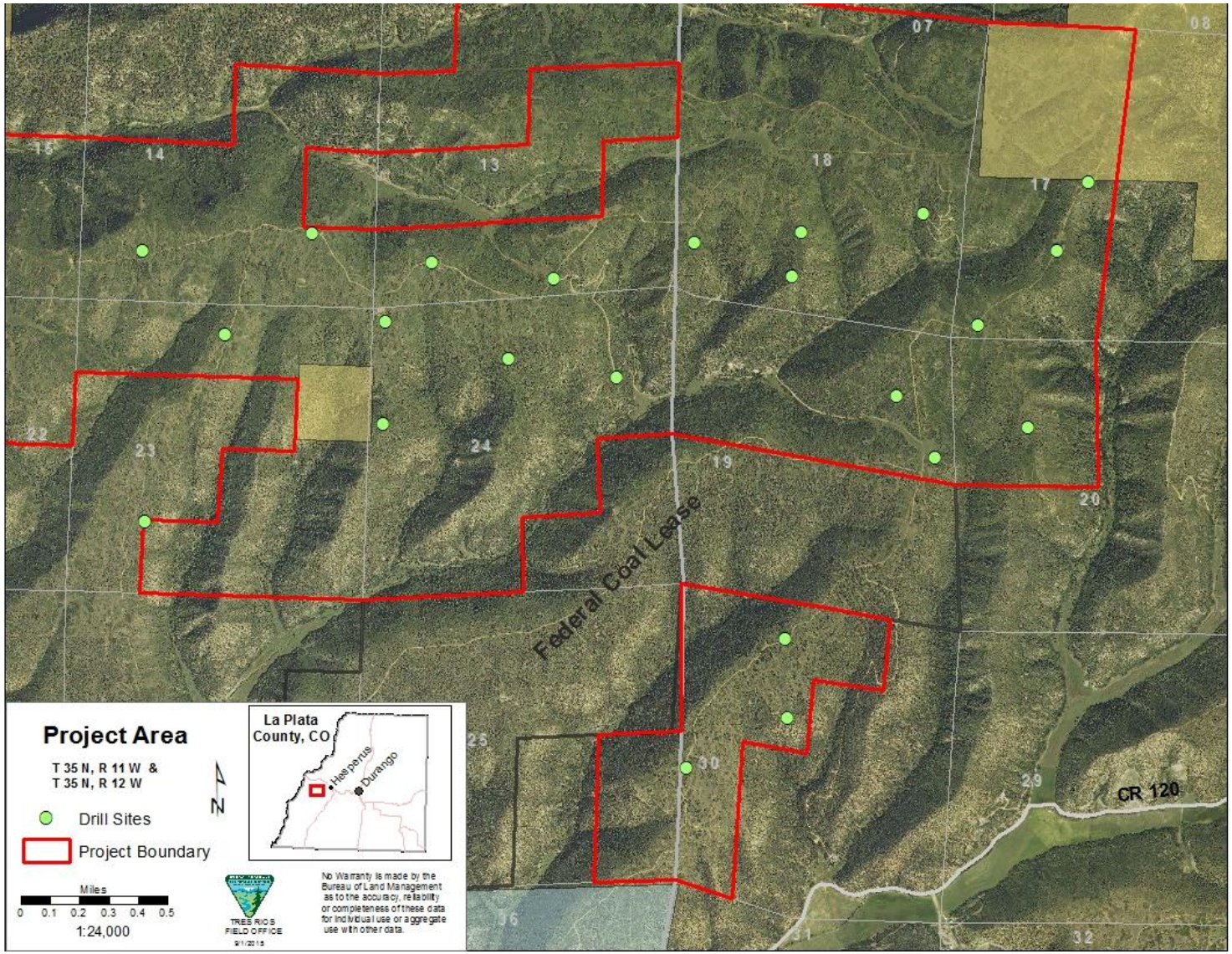

Figure 3. Site Detaill Map

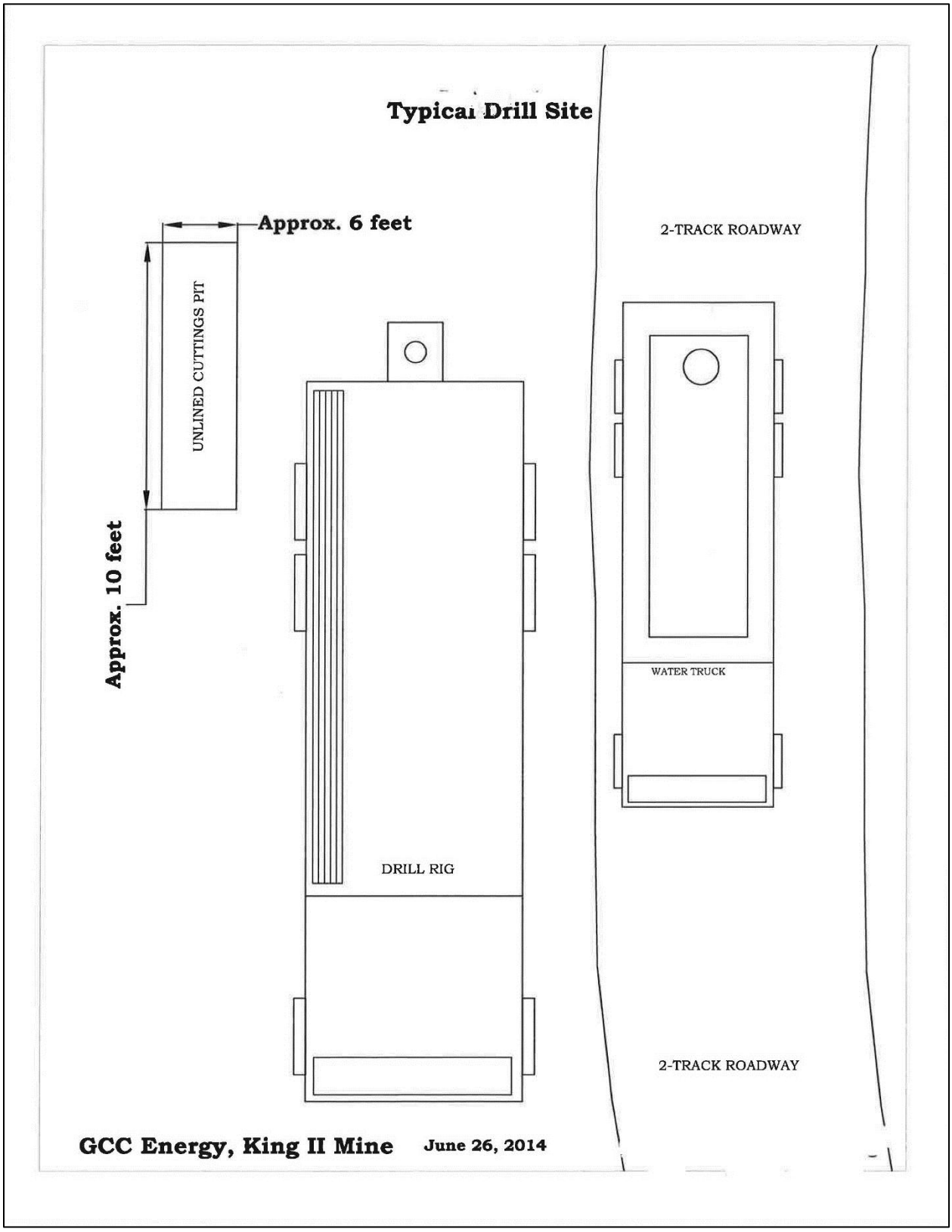
Typical Drill Site
Approx. 6 feet
Approx. 10 feet
UNLINED CUTTINGS PIT
2-TRACK ROADWAY
WATER TRUCK
DRILL RIG
2-TRACK ROADWAY
GCC Energy, King II Mine
June 26, 2014

Figure 3. Typical Drill Site GCC Energy King II Mine Diagram

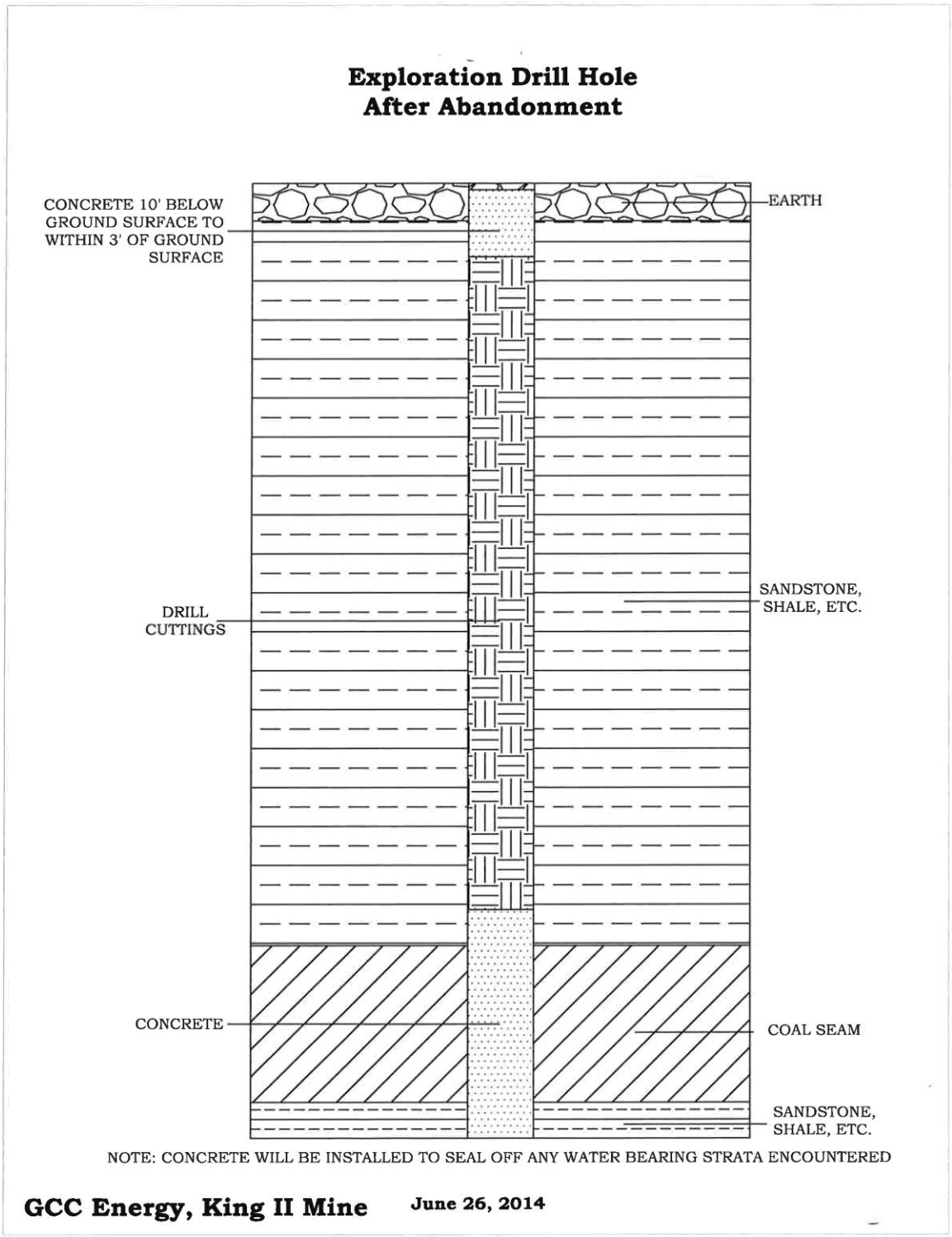

Figure 4. Exploration Drill Hole after Abandonment Diagram

Appendix B– BLM Fish and Wildlife Clearance Form

FISH AND WILDLIFE CLEARANCE REPORT
BLM TRES RIOS FIELD OFFICE

PROJECT NAME: GCC Exploration
Location: T. 35 N., R. 11 & 12 N.
Date Submitted: 20140528
Wildlife Restriction: Raptor timing restriction

Table 1. Survey results.

	A field survey was completed on (date) by (name).				
x	No field survey is required.				
	A field survey is needed, but cannot be completed by required date due to:				
	Inappropriate season		Inadequate lead time		Higher priorities

SPECIES CONSIDERED

Table 2. Federally listed species for the BLM Tres Rios Field Office based on July 14th, 2010 list from the FWS and the quarterly updates received at the Tres Rios Field Office.

Species	Status	Presence	Project Effects	Rationale
Canada lynx	Threatened	NP	NE	No habitat in project area
New Mexico jumping mouse	Proposed	NP	NE	No habitat in project area
Gunnison sage-grouse	Proposed	NP	NE	No habitat in project area
Gunnison sage-grouse critical habitat	Proposed	NP	NE	No habitat in project area
Mexican spotted owl	Threatened	NS	NE	Drilling will occur outside the breeding season.
Southwestern willow flycatcher	Endangered	NP	NE	No habitat in project area
Yellow-billed cuckoo	Candidate	NP	NE	No habitat in project area
Bonytail	Endangered	NP	NE	No habitat in project area
Colorado pikeminnow	Endangered	NP	NE	No habitat in project area
Greenback cutthroat trout	Threatened	NP	NE	No habitat in project area
Humpback chub	Endangered	NP	NE	No habitat in project area
Razorback sucker	Endangered	NP	NE	No habitat in project area
Uncompahgre fritillary butterfly	Endangered	NP	NE	No habitat in project area

**Project effect determinations are: no effect (NE); may affect (MA); not likely to adversely affect (NLAA); likely to adversely affect (LAA). Presence determinations are: habitat not present (NP); habitat present species not expected to occur (NS); suspected occurrence (S); known occurrence (K)*

Initiation of section 7 consultation with U. S. Fish and Wildlife Service (is) (is not) necessary. No depletions to the San Juan Basin, water source if from the mine water supply. Estimated water use is 3,000 gallons or 0.0092 acre feet of water.

Table 3. Colorado Bureau of Land Management sensitive fish, plant, and wildlife species based on Information Bulletin No. CO-2000-14 (November 2009) for the Tres Rios Field Office.

Species	Presence	Projects Effects	Rationale
Mammals			
Allen's big-eared bat	S	NI	No roosts will be disturbed
Big free-tailed bat	S	NI	No roosts will be disturbed
Fringed myotis	S	NI	No roosts will be disturbed
Spotted bat	NS	NI	No roosts will be disturbed
Townsend's big-eared bat	NS	NI	No roosts will be disturbed
Desert Bighorn Sheep	NP	NI	Outside species range
Gunnison's Prairie Dog	NP	NI	No colonies in project area
Birds			
American Bald Eagle	S	NI	No activity will occur during the nesting season
American peregrine Falcon	NP	NI	Cliff structure not present in project area
Ferruginous hawk	NS	NI	Outside known breeding range of species
Western Burrowing Owl	NP	NI	No habitat in project area
Colombian sharp-tailed grouse	NP	NI	Outside species range
Northern goshawk	S	NI	Raptor timing restriction to protect raptors
White-faced ibis	NP	NI	No habitat in project area
Brewer's sparrow	NP	NI	No habitat in project area
Black swift	NP	NI	No habitat in project area
Fish, Herps and Amphibians			
Bluehead sucker	NP	NI	No habitat in project area
Colorado River cutthroat trout	NP	NI	No habitat in project area
Flannelmouth sucker	NP	NI	No habitat in project area
Roundtail chub	NP	NI	No habitat in project area
Desert spiny lizard			
Longnose leopard lizard			
Canyon treefrog	NP	NI	No habitat in project area
Northern leopard frog	NP	NI	No habitat in project area
Boreal toad	NP	NI	No habitat in project area
Insects			
Great basin silverspot butterfly	NP	NI	No habitat in project area

Table 4. Birds of Conservation Concern

Species	Presence	Projects Effects	Rationale
Golden eagle	S	NI	No activity will occur during the nesting season
Prairie falcon	NP	NI	No habitat in project area
Flammulated owl	S	NI	No activity will occur during the nesting season
Lewis' woodpecker	S	NI	Timing restriction to protect migratory birds during peak breeding season.
Gray vireo	S	NI	Timing restriction to protect migratory birds during peak breeding season.
Pinyon jay	S	NI	Timing restriction to protect migratory birds during peak breeding season.
Juniper titmouse	S	NI	Timing restriction to protect migratory birds during peak breeding season.
Brown-capped rosy-finch	NP	NI	No habitat in project area
Cassin's finch	NP	NI	No habitat in project area
Grace's warbler	S	NI	Timing restriction to protect migratory birds during peak breeding season.

Only species in Bird Conservation Region 16 that may occur on the Tres Rios Field Office are addressed in table 4
Presence determinations are: habitat not present (NP); habitat present species not expected to occur (NS); suspected occurrence (S); known occurrence (K)
Project Impacts are: No Impact (NI), May impact individuals or habitat (MIIH)

MITIGATION MEASURES:

Big Game Species	Activity	Date	Stipulation Applies (yes/no)
Pronghorn	Production	May 1 – July 1st	No
	Winter Concentration	Dec. 1st – Apr.30th	No
Mule Deer	Production	No dates for mule deer production due to species biology	
	Winter Concentration	Dec. 1st – Apr.30th	No
Elk	Production	May 15th – June 30th	No
	Winter Concentration	Dec. 1st – Apr.30th	No
Rocky Mountain Bighorn Sheep	Production	April 15th – June 30th	No
	Winter Concentration	Nov 1st – Apr. 15th	No
Desert Bighorn Sheep	Production	Feb. 1st – May 1st	No
	Winter Concentration	Dec. 1st – Apr. 15th	No

Bats		Stipulation Applies (yes/no)
Maternity Sites	Timing Restriction Apr. 15th – Sept. 1st	No
Swarming Sites	Timing Restriction Aug 15th – Oct. 30th (30 min. prior sunset to 30 min after sunrise)	No
Winter Hibernaculum	Timing Restriction Oct. 15th – May 15th	No

Gunnison sage-grouse		Stipulation Applies (yes/no)
Lek Sites	No surface occupancy 0.6 miles	No
Winter Concentration Areas	No surface occupancy on winter concentration areas	No
Nesting habitat	Timing Restriction Mar. 1st – Jun. 30th	No
Winter habitat	Timing Restriction Dec. 1st – Mar. 15th	No
Noise	Timing Restriction Mar. 15th – May 15th Noise may not negatively impact lek sites	No

Sharp-tailed grouse		
Lek sites	No surface occupancy w/in 0.4 miles	No
Nesting habitat	Timing Restriction Mar. 15th – Jul. 30th w/in 1.25 miles of a lek location	No
Winter habitat	Timing Restriction Dec. 1st – Mar. 30th	No
Noise	Timing Restriction Mar. 15th – May 15th Noise may not negatively impact lek sites	No

Migratory Birds		Stipulation Applies (yes/no)
Habitat Type	Timing Limitation	
Pinyon-Juniper	May 1 – June 30	Yes
Sagebrush	May 1 – June 30	No
Spruce-Fir	June 1 – July 30	No
Ponderosa Pine	May 15 – July 15	Yes
Oakbrush	May 15 – July 15	Yes

Raptors			
Species	Type	Buffer	Stipulation Applies (yes/no)
Golden Eagle	Timing Restriction Feb. 1 —July 15	½ mile	Yes
	No surface occupancy	½ mile	No
Bald Eagle	Timing Restriction Feb. 1 – July 15	½ mile	Yes
	No surface occupancy	½ mile	No
Bald Eagle Winter Roost	Timing Restriction Nov. 15 – Mar. 15	½ mile	Yes
	No surface occupancy	½ mile	No
Osprey	Timing Restriction Apr. 1 – Aug. 31	¼ mile	No
	No surface occupancy	¼ mile	No
Peregrine Falcon	Timing Restriction Mar. 15 – July 31	½ mile	No
	No surface occupancy	½ mile	No
Northern Goshawk	Timing Restriction Mar. 1 – Aug. 31	½ mile	Yes
	No surface occupancy	½ mile	No
Burrowing Owl	Timing Restriction Mar. 15 – Aug. 15	¼ mile	No

	No surface occupancy	¼ mile	No
Mexican Spotted Owl	Timing Restriction Mar. 15 – Aug. 31	½ mile of canyon rim.	Yes
Other Raptors	Timing and NSO varies by species	by species	Yes

DISCUSSION:

Surface disturbance is minimal and no long term occupancy of the surface will occur. Impacts to wildlife will primarily be through displacement due to disturbance.
Activity is scheduled to take place in the fall.
No disturbance to raptors, raptor timing limitation
The project proponent must adhere to restrictions for MSO to ensure compliance with ESA.
There is no mapped elk or mule deer critical winter range and therefore on big game timing restrictions are not necessary.

Timing limitations:
May 1 through July 15 to protect migratory birds
March 15 through August 31 to protect Mexican Spotted Owls
February 1 through July 15 to protect nesting Bald and Golden Eagles
November 15 through March 15 to protect Bald Eagle winter roosts
March 1 through August 31 to protect nesting Goshawks
March 1 through July 31 to protect nesting raptors not listed above

Overall Timing Restriction:
November 15 through August 31 – incorporation of all above timing restrictions
Clearance surveys may be conducted in order to work during the above listed timing restrictions.

CONCLUSIONS

The proposed project will not have any impacts on species listed under the Endangered Species Act provide all activity within ½ mile of Mexican Spotted Owl habitat takes place in the fall. Exceptions to timing restrictions may be available provided clearance surveys are conducted for the species of interest.

SPECIALIST (Signature): **Date:**

/s/ *Nathaniel B. West* 20140609

Nathaniel West
Supervisory Wildlife Biologist
BLM Tres Rios Field Office